User's Guide

P310

Card
Printer
Solutions

User's Manual No. 980261-001 Rev. C

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FOREWORD

This manual contains installation and operation information for the P310 Series card printers manufactured by Zebra Technologies Corporation.

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PRODUCT WARRANTY STATEMENT

Printers

All Zebra Card Printers are warranted against defects in material or workmanship for twelve (12) months from the purchase date.

Proof of purchase or shipment date is required to validate the warranty period. The warranty becomes void if the equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

Note: Products returned must be packaged in the original or comparable packing and shipping container. In the event equipment is not so packaged, or if shipping damage is evident, it will not be accepted for service under warranty. If it is *determine*d *that the product returned for warranty service or replacement is not defective as herein defined, the customer will pay all handling and* trans*portation costs.*

Printheads

Since printhead wear is part of normal operation, the original printhead is covered by a twelve (12) month warranty. Warranty period begins on purchase date.

To qualify for this warranty, the printhead must be returned to the factory or to an authorized service center. Customers are not required to purchase Zebra supplies (media and/or ribbons) for warranty qualification. However, if it is determined that the use of other manufacturer supplies has caused any defect in the printhead for which a warranty claim is made, the user is responsible for all labor and material charges required to repair the defect. The warranty becomes void if the printhead is physically worn or damaged; also if it is determined that failure to follow the preventive maintenance schedule listed in the User's Guide has causes defect in the thermal printhead for which a warranty claim is made.

Spare Parts

All parts, maintenance kits, options kits, and accessories are warranted to be free of defects in material and workmanship for 90 days (except where otherwise denoted) from date of purchase. This warranty become void if the item is modified, improperly installed or used, or damaged by accident or neglect.

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DECLARATIONS OF CONFORMITY

CE

European Council Directive		Compliance to Standards	
89/336/EEC Modified by 92/31/EEC & 93/61/EEC	EMC Directive	EN 55022-B, CISPR 22	RF Emissions Control
	EMC Directive	EN 500082-1, IEC 801	Immunity to Electromagnetic Disturbances
73/23/EEC Modified by 93/68/EEC	Low Voltage Directive	EN60950	Product Safety

FC

Model: P310 conforms to the following specification:

FCC Part 15, Subpart A, Section 15.107(a) and Section 15.109(a) Class A digital device

Supplemental Information:
This device complies with Part 15 of the FCC Rules. Operation is subject to the following Two Conditions: (1) This device may not cause harmful interference , and (2) this device must accept any interference received, including interference that may cause undesired operation.

INDUSTRY CANADA NOTICE

This device complies with Industry Canada ICS-003 class A requirements.

Cet equipement est conforme a l'ICS-003 classe A de la norm Industrielle Canadian

INTRODUCTION

Thank you for choosing the Zebra P310 Plastic Card Printer.

These printers produce cards ideal for personalized identification, access control, visitor, membership, promotion and luggage card, badges and tags.
This manual guides you to an efficient start up and operation of your new Card Printer.

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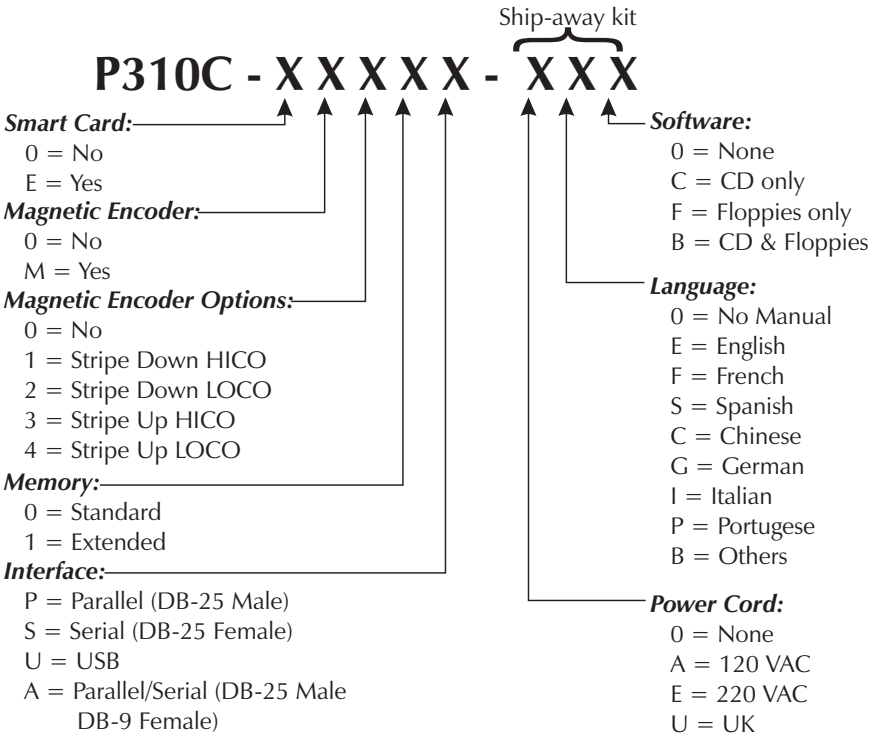
P310 PRINTER MODELS

Zebra's Product Numbers tell the story:

Here is a quick review of Zebra's Card Printer Series numbering and lettering system to help you.

Zebra's P310C Plastic Card Printer Series employ Dye Sublimation and Resin Thermal Transfer technologies. Model numbers include identifiers that specify options and items in the Ship-Away kits.



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ICONS Throughout this manual, different icons highlight important information, as follows:

Important general information

Mechanical hazard, such as one associated with moving parts, capable of resulting in equipment damage or personal injury.

Electrical hazard, such as an exposed voltage point, capable of causing electrical shock and personal injury.

An area where electrostatic discharge (ESD) can cause component damage. Use a grounding wrist band.

Elevated temperature hazard, capable of producing a burn.

Keep Card Printer clean by minimizing cover open time.

Table of Contents

ICONS vi

GETTING STARTED 1
UNPACKING YOUR CARD PRINTER 1
INDICATORS AND CONTROLS 3
PRINTER INSTALLATION 4

OPERATION 5
P310 PRINTER FEATURES 5
LOADING RIBBONS 6
LOADING CARDS 8
FEEDING ONE CARD AT A TIME 10
REMOVING CARD CARTRIDGE 10
PRINTING A TEST CARD 11

PRINTING A SAMPLE CARD 13

CLEANING 17
CLEANING SYSTEM 18
CLEANING THE PRINT HEAD 19
CARD CLEANING CARTRIDGE 20

TROUBLESHOOTING 23

TECHNICAL SPECIFICATIONS 27

APPENDIX A - MAGNETIC CARD STRIPE ENCODER 31

APPENDIX B - SMART CARD CONTACT STATION 33
INTRODUCTION 33

APPENDIX C - ACCESSORIES & SUPPLIES 35
RIBBONS 35
CARDS 36
ACCESSORIES 37

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1
GETTING STARTED

UNPACKING YOUR CARD PRINTER

Your P310 printer ships in a carton and protective anti-static bag. Keep all packing material in case you need to move or re-ship the printer.

While unpacking, inspect the carton to ensure that no damage occurred during shipping.

Please ensure that you have a clean and nearly dust free environment for proper operation and storage of the printer.

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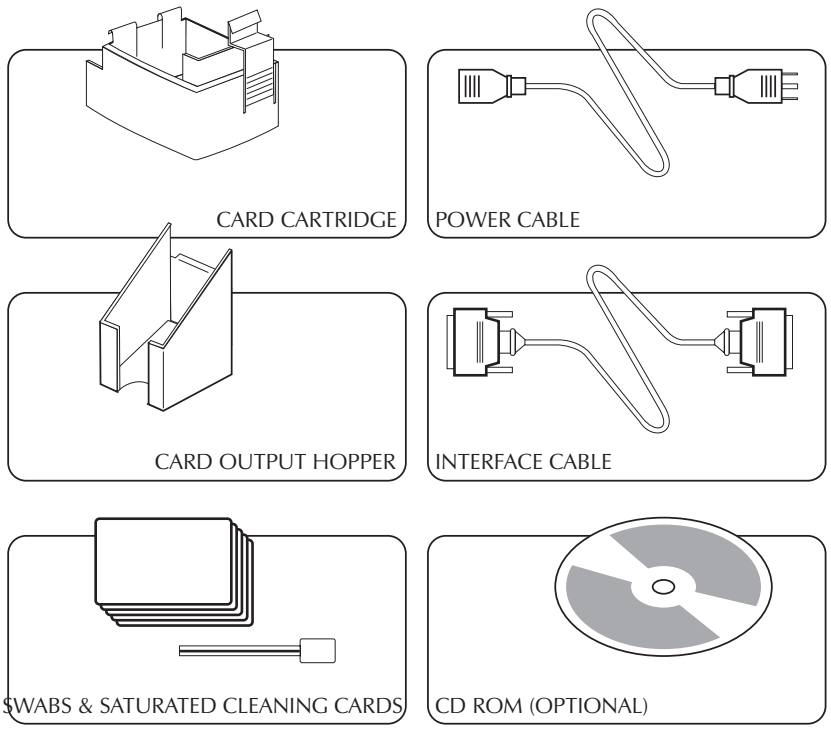
In addition to user documentation, make sure the following items are included with your P310 printer:

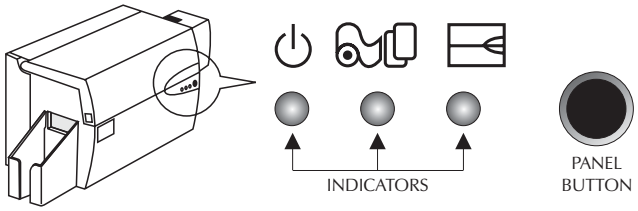


CARD CLEANING CARTRIDGE and PRINTER QUICK REFERENCE
(Not Shown)

If any items are missing, please contact your dealer.

To reorder, please refer to Appendix C of this manual.

INDICATORS AND CONTROLS Your P310 Printer has three Status indicators and a panel button on the front and a power switch on the rear:



INDICATORS (green, amber & red) signal printer activity by illuminating or flashing, as follows:

INDICATOR	ON	FLASHING
	POWER ON	PROCESSING
	LOAD CARDS	REPLACE RIBBON
	PRINTER ALERT REFER TO TROUBLESHOOTING	ENCODER ALERT REFER TO TROUBLESHOOTING

OTHER ALERTS

	AMBER & RED FLASHING	PRINTER CLEANING PROCESS REQUIRED
	ALL FLASHING	PRINT HEAD COOL DOWN MODE PRINTING WILL RESTART SHORTLY

PANEL BUTTON This is a push button to operate the printer for:

- CLEAR ERROR
- CLEANING PROCESS
  SEE CHAPTER 4
- TEST CARD
  SEE CHAPTER 2

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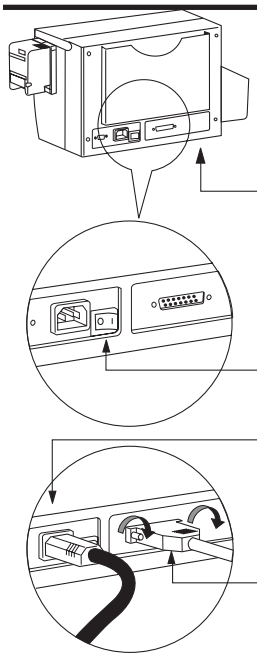
PRINTER INSTALLATION

The following will guide you through the installation of your P310 Printer.

CAUTION: Limit AC power supplied to the P310 to 110 ~ 230 volts, 60 ~ 50 Hertz, for an associated 680 ~ 280 milliamps. Limit excess current draw to 16 amps or less, using an associated circuit breaker or other such device. Never operate the printer in a location where operator, computer, or printer can get wet. Personal injury could result. The electrical security of the printer is based on the reliability of the mains power source.



1. *Place the printer in a location that allows easy access to all sides. The printer should never be operated while resting on its side or upside down.*

2. *Place the printer's power switch in the OFF (0) position.*

3. *Insert the power cable into the printer power socket and attach to grounded electrical socket of the proper voltage and type.*

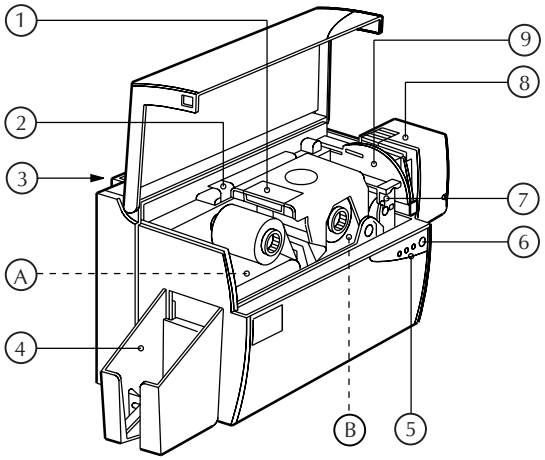
4. *Attach interface cable to printer and computer and then secure.*

5. *Switch power on.*

CAUTION: Intermittent or unpredictable operation may occur from unsecured connectors. If damaged, the power cable must be replaced by an exact equivalent.

2
OPERATION

P310 PRINTER FEATURES The following shows the features found on your P310 Printer:



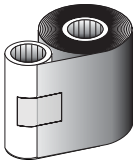
PLEASE NOTE: Any blue items inside the printer can be operated by the user.

STANDARD FEATURES
1. Print Head
2. Print Head Unlock Lever
3. Manual Holder
4. Card Output Hopper
5. Status Indicators
6. Panel Button
7. Card Cleaning Cartridge
8. Card Cartridge
9. Card Thickness Control

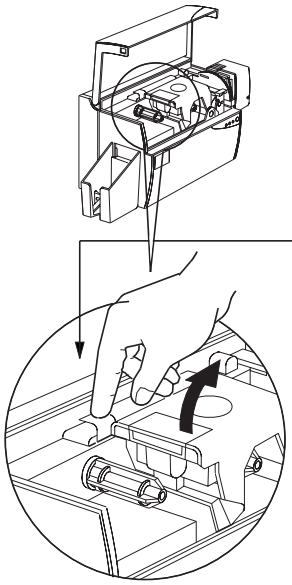
OPTIONAL FEATURES
A. Magnetic Encoding Station
B. Smart Card Contact Station

LOADING RIBBONS The P310 Printer requires approved ribbons (See Appendix C). The Resin Thermal Transfer and Dye Sublimation ribbons are specifically designed for your P310 Printer. For optimum performance and printer life (Print Head), always use approved ribbons.

DO NOT TOUCH the print head or the electronic components on the print head carriage. Discharges of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage the print head and other electronic components used in this device.

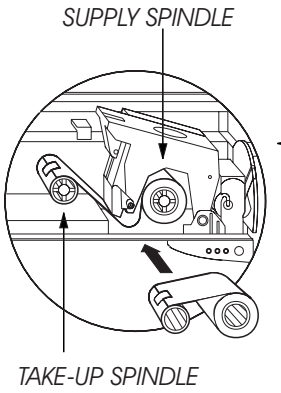


1. *Remove ribbon from packaging.*

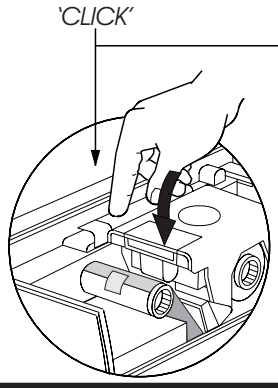


2. *Open cover and press down on the print head unlock lever to open the print head carriage. The print head carriage will pop open.*

Continued on next page .....



3. *Load ribbon onto the supply spindle (under print head carriage) and empty core (with tape attached) onto the take-up spindle. Make sure the ribbon comes off of the top of the supply spindle and feeds to the top of the take-up*

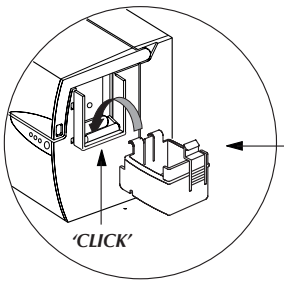


4. *Push down on the Print Head Lock Lever until an audible 'click' signals the locked-down position.*

5. *Close Cover.*

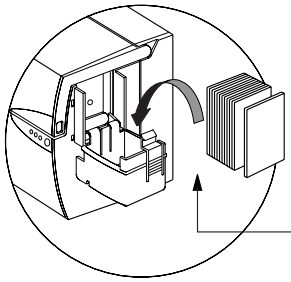
Please note that the ribbon automatically synchronizes whenever the print head lock down occurs.

LOADING CARDS To help you load, print, and collect cards, the P310 has with the following items:



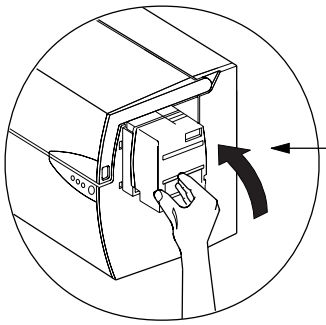
A - CARD CARTRIDGE
For loading cards.

1. *Install Card Cartridge by hooking onto printer as shown and clicking down.*



2. *Install cards into Cartridge.**

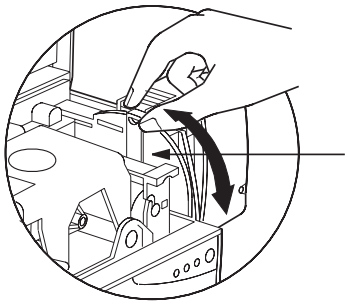
DO NOT bend cards or touch print surfaces as this can reduce print quality. The surface of the cards must remain clean and dust free. Always store cards in an enclosed container. Ideally, use cards as soon as possible. If cards stick together, carefully shuffle them.



3. *Close hopper.*

B - CARD THICKNESS CONTROL LEVER

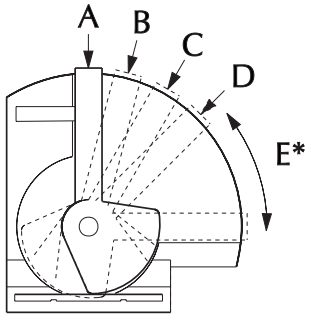
This item is operated by the user to prevent more than one card feeding into the printer at the same time and causing a jam.

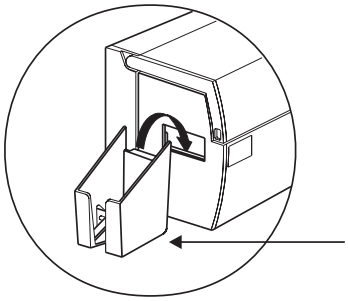


Open Cover, and adjust lever to correct position. Repeat for different card thickness. (Factory setting is for 30mil (0.762mm) card thickness. See diagram below:

Card Thickness:
A - 60mil (1.524mm) to 50mil (1.27mm)
B - 40mil (1.016mm)
C - 30mil (0.762mm)
D - 20mil (0.508mm)
E*- Less than 20mil (0.508)
* Start at lowest position and move lever up to match card thickness.

For other card thickness, start lever at lowest position and move up until cards feed.





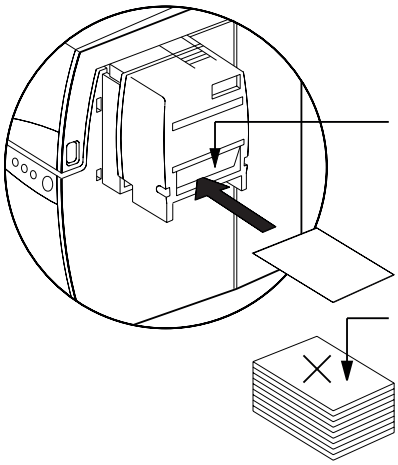
C - CARD OUTPUT HOPPER

For collecting printed cards

Install Card Output Hopper onto printer by hooking over bottom edge of card exit aperture.

FEEDING ONE CARD AT A TIME

A Manual Feed Slot is available on the side of the Card Input Hopper for feeding single cards. Cleaning Cards are fed manually throught this slot. The Card Cartridge must be empty for manual card feeding to work properly.

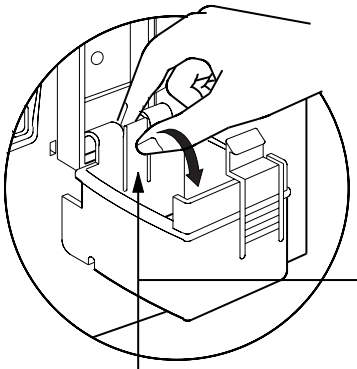


For one-at-a-time printing, feed cards through slot on side of

Do not feed more than one card at a time.

REMOVING CARD CARTRIDGE

Remove the Card Cartridge prior to packaging the printer for shipment.



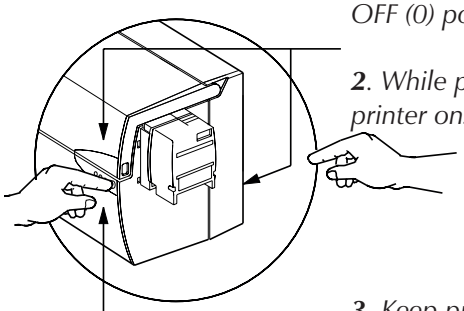
To remove, pull hook back, and lift hopper out.

HOOK

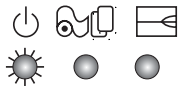
PRINTING A TEST CARD With ribbon and cards loaded, your P310 printer is ready to print. To check the operation of the printer you should print a test card.

1. *Place the printer's power switch in the OFF (0) position..*

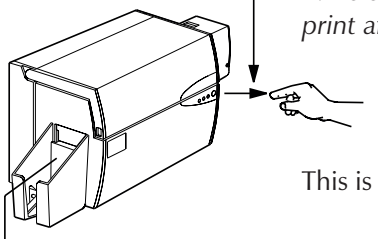
2. *While pressing the panel button, switch printer on. Green indicator will show.*



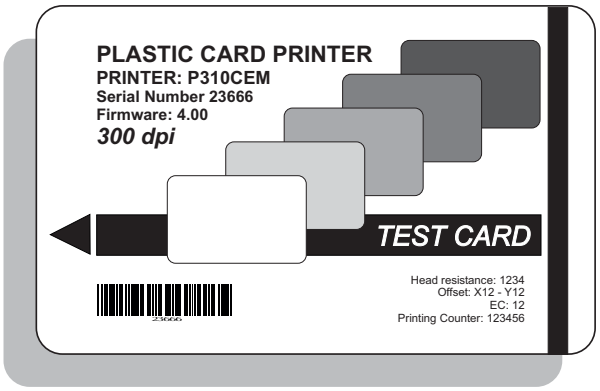
3. *Keep pressing panel button until green indicator starts flashing.*



4. *Release panel button and a test card will print after a few seconds.*



This is an example of the test card.



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3
PRINTING A SAMPLE CARD

Printing with the P310 Printer requires the Windows printer driver, the WindCard software, or printer command level programming through the printer interface.

The P310 Card Printer can be used with any Windows 95/98 and Windows NT 4.0 software application program, using the drivers provided with the printer.

This section contains information on the printing of a sample card in color (using the 5-Panel color ribbon YMCKO) and the Windows printer driver.

BEFORE installing updated printer driver versions, always delete the existing printer driver version from your computer.

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TO INSTALL THE P310 PRINTER DRIVER INTO WINDOWS 95, USE THE FOLLOWING STEPS:

1. Start your computer and then Windows.

2. Insert either the CD ROM or Diskette containg the Windows Driver into the associated drive.

3. Under Windows click the **Start** button, Select **Settings**, then **Printers**.

4. Double-click on the **Add Printer** icon. The **Add Printer Wizard** will display a list of printers. Select **Have Disk** and locate the P310 Drivers on the CD. For more information about how to install a Windows driver please consult the appropriate Microsoft documentation.

Once the printer driver has been successfully installed, you will need to configure it for you printer. This driver provides control of several printer features when printing from Windows applications. These features are accessed through the P310 Plastic Card Printer **Properties**. To access these properties select the **Zebra P310 Card Printer** icon in **Printers**. Then click **File** Menu and select **Properties**.

The P310 Printer screen appears. Change the options as follows:

1. On the **Printer Tab** configure the magnetic encoder feature. If your printer is equipped with a Magnetic Encoder option, select **With Magnetic Encoder** option.

2. On the **Card Tab** select card orientation:
Landscape or Portrait - Select 'Landscape.'

3. On the **Ribbon Tab**, select the Ribbon Type. Select **YMCKO** for the standard 5-panel ribbon.

4. In the same tab, go to **Black Panel** area and select **Text Only**. This option allows the text printing using the Black Resin Panel from the Color Ribbon.

5. Close the **Zebra P310 Printer Properties** screen.

Now that you have loaded media and set up the printer driver, the P310 Printer is ready to print.

EXAMPLE: FOLLOW THESE STEPS TO PRINT YOUR FIRST CARD:

1. Go to the Microsoft Word Software.

2. If the printer was not selected as the default printer, go to the **File** menu and point **Printer Setup** and choose **Zebra P310 Card Printer** in the list. Then press **Close** button.

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3. Come back to **File** menu and point **Page Setup**.

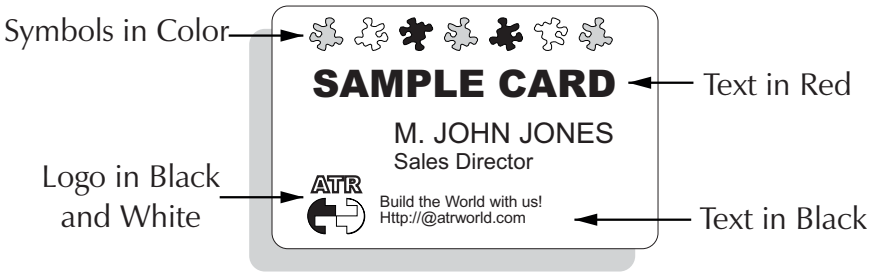
4. Select **Size Tab** and in **Paper Size** choose **Card**. Then select the orientation: 'Landscape.'

5. Go to **Margins Tab**, put the top, bottom, left and right margins with 0 values.

6. Press OK to close Page Setup Window.

7. The card appears on the screen.

8. Design a card with both black and colored text and with colored pictures, i.e.:



9. Once you are ready to print, go to **File** and point **Print**.

10. The printer will feed in a card and start printing (the data downloading time will vary depending on the complexity of the card design and the processing speed of your computer).

11. Once the printing job is achieved the card is ejected from the printer.

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4
CLEANING

PROTECT YOUR FACTORY WARRANTY!

The recommended maintenance procedures must be performed to maintain your factory warranty.

Other than the recommended cleaning procedures described in this manual, allow only Zebra authorized technicians to service the P310 Printer

NEVER loosen, tighten, adjust, or bend, etc. a part or cable inside the printer.

NEVER use a shop air compressor to remove particles in the printer.

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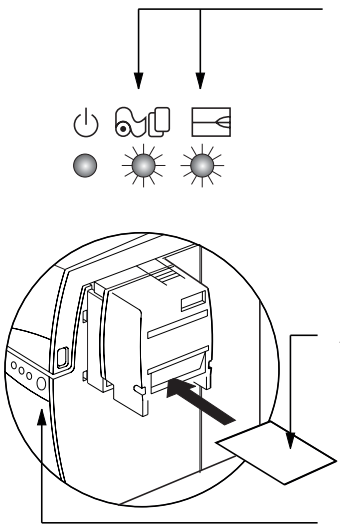
CLEANING SYSTEM Your P310 Printer includes a simple cleaning system using the Pre-saturated Cleaning Cards provided. The regular use of these cards will clean and maintain important parts of your printer: including the Print Head, Transport Rollers, and Magnetic Encoder Station.



WHEN TO CLEAN
When the amber & red indicators flash (Every 1000 cards approx.)*
**Using 5-panel color ribbon (YMCKO).*
**Optional factory setting.*

HOW TO CLEAN
1. *Leave power on.*
Open Cover and release Print Head Bracket to remove ribbon.
Close Print Head.
Close Cover. Remove cards from Card Cartridge.

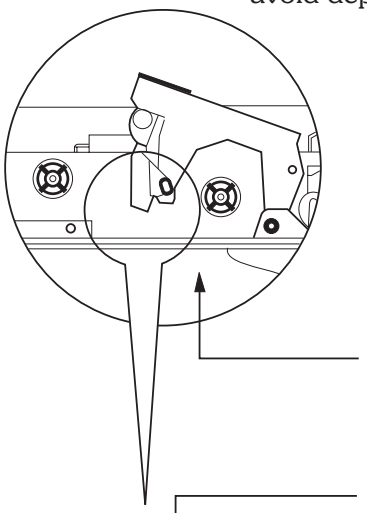
2. *Insert one Pre-saturated Cleaning Card (provided) through slot on the side of the Card Cartridge.*

3. *Press the Panel Button for a few seconds. The Card will feed into printer and carry out the cleaning process.Repeat the process with a new Cleaning Card if necessary.*

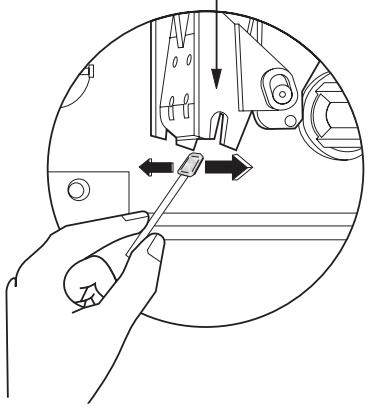
Note: *For cleaning prior to the WHEN TO CLEAN signal, press the Panel Button for 3 seconds to start the cleaning process.*

Although the amber and red indicators will keep flashing until the cleaning process has been performed, the printer will continue to operate.

CLEANING THE PRINT HEAD A cleaning using the Cleaning Cards usually suffices. However, a separate Print Head cleaning using swabs can remove more stubborn deposites when print anomolies persist. To avoid deposits, only use foam-tipped swabs.



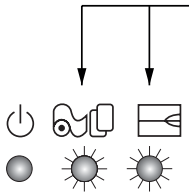
1. *Raise Print Head and remove the Ribbon.*



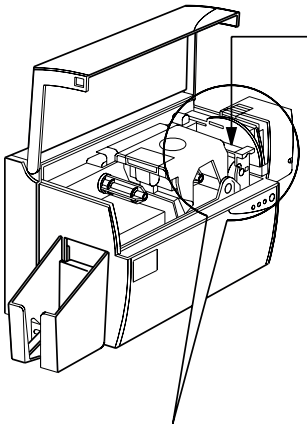
2. *Clean Print Head by moving alcohol-moistened swab tip side-to-side across Print Head elements. Only use moderate force. (To reorder swabs see Appendix C.)*

Never use a sharp object to scrape deposites from the print head. Permanent damage will result.

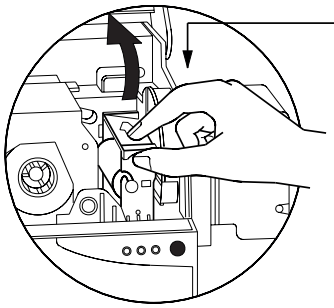
CARD CLEANING CARTRIDGE Your P310 Printer also has a Card Cleaning Cartridge. This item cleans the cards entering the printer. To ensure print quality, the cleaning roller requires periodic replacements.



WHEN TO MAINTAIN
When the amber & red indicators flash.
(Every 1000 cards approx)*
**Using 5-panel color ribbon (YMCKO)*
**Optional factory setting.*

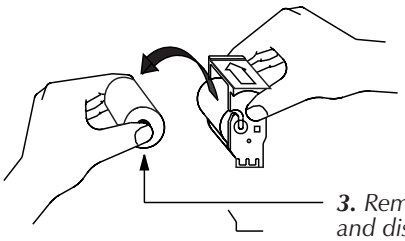


HOW TO MAINTAIN
1. *Turn power off. Open Cover and locate Cleaning Cartridge..*

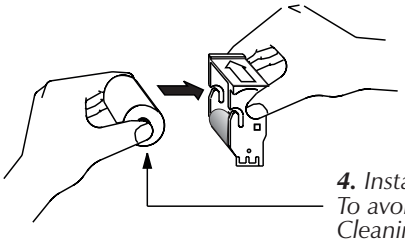


2. *Gently remove by rotating up and away from printer.*

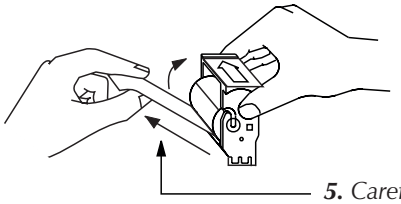
Continued on next page...



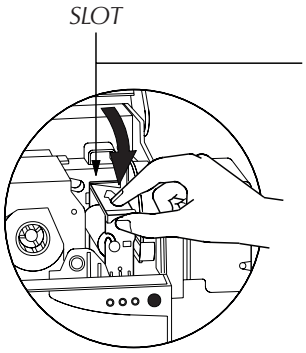
3. *Remove Cleaning Roller from Cartridge and discard.*



4. *Install new Cleaning Roller into Cartridge*. To avoid contamination, always hold the Cleaning Roller assembly by the ends.*



5. *Carefully peel off wrapper from new Cleaning Roller while in Cartridge.*



6. *To replace Cartridge into printer: Make sure the arrow on top of the assembly is facing toward the rear of the printer. Hook assembly into slot on printer and rotate down. Ensure the assembly locks in place.*

DO NOT touch the roller surface that contacts the cards.

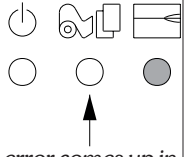
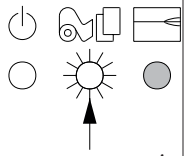
7. *Close Cover.*

** See Appendix C for replacement Cleaning Rollers.*

Although the amber and red indicators will keep flashing until maintenance has been performed, the printer will continue to operate.

5
TROUBLESHOOTING

The following offers causes or solutions to symptoms related to improper operation. Check this table when experiencing any loss of operation or print quality. Note that the LEDs appear white for ON, dark for OFF, and circled with radial lines for FLASHING.

SYMPTOMS / DESCRIPTION	REASON / SOLUTION
AMBER INDICATOR ILLUMINATES  **Media alert: Cards** *The Printer stops and an error comes up in the Windows application program or in WindCard Software.*	1. Check for Cards in Card Cartridge. 2. Check Card Thickness Control setting. 3. Press the Panel Button for 1 second. The printing job will restart.
AMBER INDICATOR FLASHES  **Media alert: Ribbon** *The Printer stops and an error comes up in the Windows application program or in WindCard Software.*	1. Check ribbon. 2. Load new ribbon. 3. Ribbon will automatically synchronize and printing will restart with new card.

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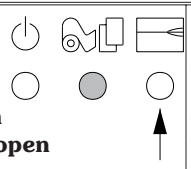
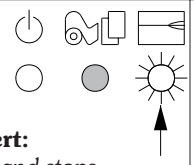
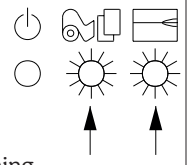
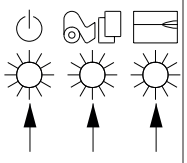
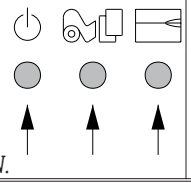
RED INDICATOR ILLUMINATES  **Printer alert: Ribbon** **Print Head Bracket open** **Card Jam** **Ribbon Jam** **Command Error** *The printer stops working*	1. Check Print Head Bracket is closed. 2. Check if you are using correct card type (see Technical Specifications). 3. Check Card Thickness Control Lever is properly adjusted for correct card thickness (see Chapter 2 - Loading Cards). 4. If two cards are fed into printer at same time: - Open cover & remove Card Cleaning Cartridge, empty feeder, pull jammed cards out. Replace Card Cleaning Cartridge. - Remove cards from Card Cartridge, shuffle them and replace. 5. Check ribbon is loaded correctly inside printer. 6. Check command.
RED INDICATOR FLASHES  Magnetic **Encoder alert:** *The Printer ejects card and stops.*	1. Check that you are using correct magnetic card type (for low or high coercivity encoding). 2. Verify Command Syntax. 3. Call technical support.
AMBER & RED INDICATORS FLASH  **Cleaning alert:** The Printer needs cleaning.	1. Printer cleaning required. See Chapter 4.
ALL INDICATORS FLASH  **Print head alert:** **Cool down mode** *Printing stops*	1. Printing will restart automatically after a few seconds.
NO INDICATOR ILLUMINATES  **Power cord** *The power switch is ON.*	1. Make sure power cord is plugged in properly at both ends. 2. Call technical support.

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CARDS HAVE 'SCRATCH LINES' MISSING PRINTING. **Incorrect rolled ribbon** **Dust** **Print head** *There are non-printed horizontal lines (white) on card surfaces.*	1. Incorrect position of ribbon. Check ribbon is properly rolled onto the ribbon core and there are no pleats. 2. There may be dust on the print head (see Chapter 4, Cleaning). 3. An element on the print head may be scratched or burnt. Contact technical support for print head replacement information.
POOR PRINTING QUALITY **Dust on print head.** **Contrast & Intensity values.** *Printing shows very pale or inconsistent results.*	1. There may be dust or embedded contaminations on elements of the print head. Clean print head (see Chapter 4, Cleaning. 2. Contrast and/or intensity colors may be set to high values. Adjust contrast and intensity values in software or with programing.
PRINTING HAS VOIDS **Dust inside printer** **Contamination on card surface** *Small spots on the printed card with a non-printed area or a different printed color.*	1. This may be caused by dust inside the printer and/or a dirty Cleaning Roller Assembly (see Chapter 4, Cleaning). 2. This may be caused by contaminations on the card surface. Check that cards are stored in a dust free environment.

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6
TECHNICAL SPECIFICATIONS

General

- High speed printing, over 140 cards/hour edge to edge in full color (YMCKO) throughput
- Small footprint
- Easy to use Wind Card Classic utility tool (option)
- Windows Drivers for 95 and NT 4.0 (option)
- One year printer warranty
- One year (100k passes) print head warranty
- Powerful EPCL (Zebra's Command Language)

Color Printing

- Color dye sublimation or monochrome thermal transfer printing
- 25 seconds per card edge to edge in full color (YMCKO)
- 300 dpi (11.8 dots/mm) print resolution
- Edge to edge printing standard

Bar Codes

- Code 39
- Code 128 B & C with & without check digit
- 2 of 5 & 2 of 5 industrial
- UPCA
- EAN8 & EAN 13
- PDF 417 2D bar code and other symbologies available via WindCard Classic utility tool (option)

Fonts

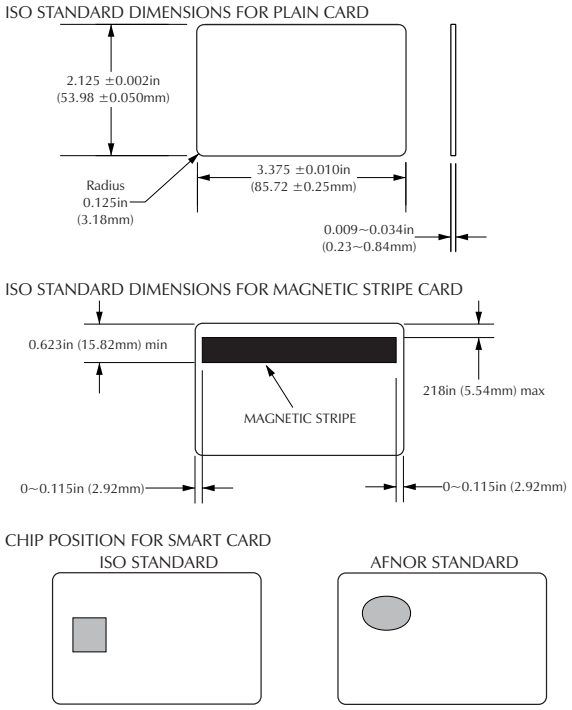
- Resident: Normal 100, Bold 100

- True Type fonts available via Windows Driver and WindCard Classic utility tool (option)

Cards*

- Types PVC, Composite
- Card width/length: ISO CR-80 - ISO 7810, 2.125" (54mm) by 3.385" (86mm)
- Option: Magnetic Stripe - ISO 7811
- Option: Smart Card - ISO 7816-2
- Card thickness: 10 mil (0.25mm) to 60 mil (1.524mm)
- Card Cartridge capacity: Up to 210 cards (10 mil), up to 75 cards (30 mil)
- Card Output Hopper capacity: up to 210 cards (10 mil), up to 75 cards (30 mil)

CARD DIMENSIONS



* Use Zebra approved media only.

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Ribbons*
- Monochrome: 1500 cards/roll
- Monochrome colors: black, red, blue, green, silver, gold, white, scratch-off grey
- K-resin + O: 800 cards/roll
- K-dye + O: 800 cards/roll
- YMCKO: 350 cards/roll

Overlay Varnish
- Thermal transfer
- 4 microns thick
- Clear and holographic options:
  - Clear
  - Genuine/Secure Hologram
  - Pcard Hologram
  - Custom Hologram

Interfaces
- Parallel Standard (cable included)
- RS-232C Serial (option)

Mechanical
- Width: 11.8" (315mm)†
- Depth: 7.75" (198mm)†
- Height: 8.7" (220mm)†
- Weight: 13.4lbs (6.1kg)

Electrical
- 110 ~ 230 Volts AC, 60 ~ 50 Hz
- FCC Class A, CE, UL, and CUL approved

Environmental
- Operating Temperature: 60 to 86°F (15 to 30°C)
- Operating Humidity: 20 to 65% non condensing
- Storage Temperature: -23 to 158°F (-5 to 70°C)
- Storage Humidity: 20 to 70% non condensing
- Ventilation: Free air

* Thermal transfer (Resin) ribbons offer more durability than dye sublimation, with greater resistance to scratches and UV-induced fading.

Dye Sublimation printing requires dye sublimation ribbons, with either black or cyan, magenta, and yellow (plus black resin) panels.

† Measured without card feeder and card hopper

Options

- RS-232C serial port
- Smart Card Contact Station (30 mil cards only)
- Magnetic Encoder (30 mil cards only)
- Extended Warranty program
- Hot Swap Warranty program
- Cleaning supplies
- Service Manual
- WindCard design software

Use only Zebra-approved card and ribbon media. Using non-approved card or ribbon media can void your warranty.

Refer to the Accessories section for more information about Card and Ribbon Media available from Zebra Technologies.

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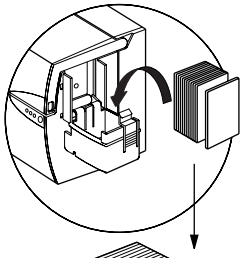
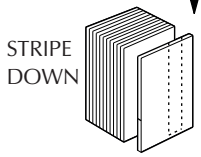
APPENDIX A - MAGNETIC CARD STRIPE ENCODER

Operation and maintenance requirements for the P310 Printer with the optional magnetic card stripe encoder. (See Chapter 2 for location). The magnetic encoder can be set for either high and low coercivity.

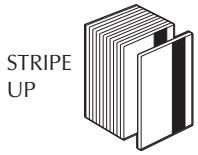


The magnetic encoder is a factory installed item with the read/write head positioned below the card path, available with HICO encoding (P310CM1 or (P310CEM1) or LOCO encoding (P310CM2 or P310CEM2).



When loading cards into the Card Cartridge, please ensure the magnetic stripe is facing towards the printer and closest to the rear.

Also available are Printer models with the Magnetic Read/Write head positioned above the card path, with HICO encoding (P310CM3 or P310CEM3) or LOCO encoding (P310CM4 or P310CEM4).



When loading cards, please ensure the magnetic stripe is facing away from the printer and closest to

NOTE:

M1 - HICO encoding - stripe down
M2 - HICO encoding - stripe down
M3 - LOCO encoding - stripe up
M4 - LOCO encoding - stripe up

Approved HICO & LOCO PVC cards are available. (See Appendix C.)

SAMPLE ENCODING PROGRAM
Refer to Programmer's manual (Part number 980081-001)

ONLY USE cards that comply with ISO 7810 & 7811 standards for magnetic stripe cards. The magnetic stripe must be flush to the surface of the card to work properly. Never use taped-on magnetic stripes.

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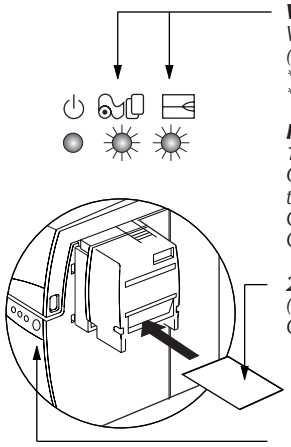
The read/write head requires periodic cleaning to maintain error-free encoding



WHEN TO CLEAN
When the amber & red indicators flash
(Every 1000 cards approx.)*
**Using 5-panel color ribbon (YMCKO).*
**Optional factory setting.*

HOW TO CLEAN
1. *Leave power on.*
Open Cover and release Print Head Bracket to remove ribbon.
Close Print Head.
Close Cover. Remove cards from Card Cartridge.

2. *Insert one Pre-saturated Cleaning Card (provided) through slot on the side of the Card Cartridge.*

3. *Press the Panel Button for a few seconds. The Card will feed into printer and carry out the cleaning process.Repeat the process with a new Cleaning Card if necessary.*

Note: *For cleaning prior to the WHEN TO CLEAN signal, press the Panel Button for 3 seconds to start the cleaning process.*

Although the amber and red indicators will keep flashing until the cleaning process has been performed, the printer will continue to operate.

ISO STANDARD ENCODING

Track #	Field Separator	Track Density	Valid Characters	# of Characters
1	^	210BPI*	Alphanumeric (ASCII 20~95†)	79‡
2	=	75BPI*	Numeric (ASCII 48~62)	40‡
3	=	210BPI*	Numeric (ASCII 48~62)	107‡

* Bit per inch
†Except the '?' character
‡ Including Start, Stop and LRC characters. Also note that these 3 characters are automatically managed by the magnetic encoder according to the ISO Standard Norms.
NOTE: Refer to the Card Printer Programmer's Manual for complete programming information.

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APPENDIX B - SMART CARD CONTACT STATION

This section contains information on the additional operations of the P310 Printers with Smart Card Contact Stations. (See Chapter 2 for location.)

INTRODUCTION Smart Cards can have a built-in microcomputer and a battery. Card Memory can store fingerprints, voice recognition patterns, medical records and other such data. The P310 may be equipped with an optional contact station for programming Smart Cards (ISO 7816). This printer model responds to commands that position the cards at the contact station, where the printer connects to the contacts on the Smart Cards. All other printer operations remain the same as the standard P310 model.

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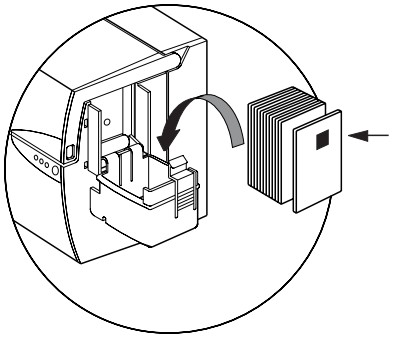
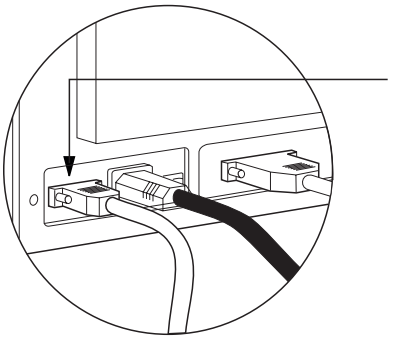


MEDIA LOADING ORIENTATION

Orient the cards with the Smart Card Chip at the top of the card and facing away from the printer.



SMART CARD CONTACT STATION INTERFACE

When a command to the parallel printer interface sends a card to the Smart Card Contact Station, the printer connects the Smart Card Contact Station to the female DB-9 connector on the rear of the printer.

An attached external Smart Card Programmer can be used to program Smart Card chips.

DO NOT position printing over the Smart Card Chip

DB-9 PINS	SMART CARD CONTACT POINTS	DB-9 PINS	SMART CARD CONTACT POINTS
1	C1 (Vcc)	6	C6 (Vpp)
2	C2 (Reset)	7	C7 (I/O)
3	C3 (Clock)	8	C8 (RFU)
4	C4 (RFU)	9	(GND when chip is at station)
5	C5 (GND)		

Refer to the Card Printer Programmer's Manual for complete programming information.

APPENDIX C - ACCESSORIES & SUPPLIES

Please contact your Zebra-authorized dealer to place an order accessories and supplies

RIBBONS The following ribbons are optimized for use in the P310 Printers:

Monochrome Resin Ribbons (Sold by the Roll)	
Part Number	Description
800015-301	Black - 1500 images
800015-302	Red - 1500 images
800015-303	Green - 1500 images
800015-304	Blue - 1500 images
800015-305	Yellow - 1500 images
800015-306	Gold - 1500 images
800015-307	Silver - 1500 images
800015-309	White - 1500 images
800015-385	Scratch-Off Gray - 1500 images

Color Ribbons (Sold by the Roll)	
Part Number	Description
800015-340	5-Panel Color (YMCKO) - 350 images
800015-350	2-Panel Black (Kdye+O) 800 images
800015-360	2-Panel Resin - (Kresin+O) 800 images

Note:
Y = Yellow, M = Magenta, C = Cyan, K = Black, O = Overlay

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CARDS The following cards are optimized for use in the P310 Printers:

Standard Grade PVC *	
Part Number	Description
104523-101	Card, 10mil (200 pack)
104523-110	Card, 10mil adhesive back (200 pack)
104523-104	Card, 30mil (100 pack)
104523-105	Card, 30mil Low Coercivity Mag. Stripe (100 pack)
104523-106	Card, 30mil High Coercivity Mag. Stripe (100 pack)

Premimum Grade PVC †	
Part Number	Description
104523-111	Card, 30 mil (100 pack)
104523-112	Card, 30 mil Low Coercivity Mag. Stripe (100 pack)
104523-113	Card, 30 mil High Coercivity Mag. Stripe (100 pack)

Composite PVC (Polyester Core) †	
Part Number	Description
104524-101	Card, 30 mil (100 pack)
104524-102	Card, 30 mil Low Coercivity Mag. Stripe (100 pack)
104524-103	Card, 30 mil High Coercivity Mag. Stripe (100 pack)

Starter Packages	
Part Number	Description
105909-155	Premium Package 1: includes 200 10-mil cards and 100ea of the following: 30mil., 30 mil. LOCO, 30 mil. HICO.

NOTES:
* Recommended for monochrome and spot color (logo and picture) printing only.
† Recommended for edge-to-edge printing.
‡ 10mil = 0.254mm; 30mil = 0.762mm

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ACCESSORIES Accessories available for P310 Printers appear below. Always refer to the part number when placing an order.

Part Number	Description
300055-001	Card Printer Parallel/Serial Interface Cable, ft. (DB-25 male to DB-25 female)
105536-001	Software CD ROM: WindCard Software, Windows Drivers, Documentation
980261-001	P310 User's Manual (English)
980261-021	P310 User's Manual (French)
980261-031	P310 User's Manual (German)
980261-051	P310 User's Manual (Italian)
980261-041	P310 User's Manual (Spanish)
980021-081	P310 User's Manual (Portugese)
980261-061	P310 User's Manual (Chinese)
980261-071	P310 User's Manual (Japanese)
980081-001	P310 Programming Manual
980264-001	P310 Maintenance Manual
806503-001	Card Punch (slots for lapel clip)
104527-001	Lapel Clips (100 pack)
104522-001	Video Kit (video capture card, video camera, one 5-panel color ribbon, 100 30-mil PVC cards)
105912-024	Card Cartridge
105912-038	Card Output Hopper
105909-055	Cleaning Card Kit (box of 100)
105909-057	Cleaning Swab Kit (box of 25)
105912-015	Ribbon Take-Up Core (10)
105909-112	Replacement Print Head Kit
105912-003	Cleaning Roller Kit (5)
105912-002	Card Cleaning Cartridge

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